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other editions, keeping it abreast with the times. From the brevity of the treatment and the propagandist aim, it results that the statements given are in some cases rather more confident or dogmatic than the facts known to us may warrant. In particular, I should have wished to look a little more cautiously over some of Karl Pearson's results, such as those on the inheritance of mental traits and on the greater susceptibility to disease of the first born in a family. Broadly speaking, however, the arguments are sound and well presented, and any non-scientific person reading and accepting them as they stand will not go far astray.

The first chapter, on "the sources and aims of the science of eugenics" begins with a summary of the history of the subject, and goes on to discuss the relations of biology to sociology, giving some of the sociological data which are important for the "eugenist." The second goes into the biological foundations of eugenics, and gives a condensed account of the main facts concerning variation, heredity and kindred matters. In the description of the Mendelian phenomena, the first case given is one (the Andalusian fowl) in which the heterozygous form is unlike either of the homozygous ones. This reverses the usual order, with I think distinct advantage, making the matter clearer and showing from the start that dominance is not essential to Mendelism. The third and final chapter is a long one on human heredity and the eugenic program. In it are given many striking human pedigrees, and much other information likely to astonish many readers. On page 200, in discussing the inheritance of acquired characters, the "giraffe's neck and the fox's cunning" are classed among these, by some slip or ambiguity. In connection with this matter we may perhaps question the practical limitation of the concern of the eugenist (pp. 42-43) to "conditions which affect the innate characteristics of the race," as it is obvious that improved social conditions will tend to bring out or make visible desirable innate qualities, which may then be considered successfully from the standpoint of eugenics.

The author rightly insists that a large part of the present eugenic program is educational. Scientific men who are of this opinion can do something for the cause if they will help to circulate Professor Kellicott's book.

T. D. A. COCKERELL

Animal Intelligence. By Professor E. L. THORNDIKE, Columbia University. New York, The Macmillan Co. 1911. Pp. viii + 297. \$1.60 net.

Students of behavior, biologists and experimental psychologists, alike, welcome the volume containing the collected papers on animal psychology of Professor E. L. Thorndike which has just been published in the Animal Behavior Series.

For some years the most important two of the papers, "Animal Intelligence" and "The Mental Life of Monkeys," published originally as Monograph Supplements to the *Psychological Review*, have been out of print. Since Thorndike's studies marked the dawn of the experimental era in animal psychology it is distinctly worth while to have this material in convenient form and available for students for years to come. The historical value of the work, however, is not the chief reason for the publication of the volume. However much the technique and scope of animal psychology may have advanced since the first appearance of Thorndike's work, his penetrating discussions of the general nature of animal mind have by no means been outgrown. In looking back upon his work one is struck by the boldness and apparent rashness of his general conclusions, especially in view of the fact that his experimental material was limited; and yet those conclusions in the most essential points have stood the test of twelve active years.

J. B. WATSON

QUOTATIONS

SEVEN YEARS' PROGRESS IN MEDICAL EDUCATION

THOSE who have been watching the development of medical education in this country have noted with no little astonishment and gratification the remarkable progress that has been made in recent years and particularly

since the American Medical Association created its permanent committee, the Council on Medical Education. At the beginning of its work in 1905, after a thorough investigation of conditions the council formulated two standards of medical education, one for immediate adoption and an ideal standard for future consideration. These standards were not for any one state or for any one section, but for the entire country. The result is that nearly all colleges are up to or beyond the standard recommended in 1905 for "immediate adoption," while more than a third of the colleges (42) have, so far as entrance requirements are concerned, adopted the "ideal," namely, a four-year high school education, plus at least one year to include thorough courses in physics, chemistry, biology and modern languages.

During 1906 and 1907, the council made the first complete personal tour of inspection of the medical colleges of the United States that had ever been made, and in 1907, reported its findings at its annual conference and to the House of Delegates of the American Medical Association. This inspection revealed the fact that nearly a third of the medical schools existing at that time were seriously defective in their methods, standards and equipment. Since that report was made the decrease in the number of these inferior colleges has been marked, while, on the other hand, there has begun a corresponding improvement in many other colleges. The second inspection was completed in 1910, and resulted in the publication of a classified list of medical colleges. This doubtless gave added impetus to the improvements being made and to the further elimination of unworthy colleges. In seven years, therefore, the over-supply of medical schools has been reduced in number, quantity giving way to quality, and a decided check has been placed on the rapid multiplication of inferior schools.

In 1908 and 1909, a thorough study of the medical college curriculum was made by a special committee of the council, made up of over a hundred leading medical educators, to ascertain the relative value of the subjects of the curriculum in order that proper emphasis

might be laid on them in the medical course. This special study also included the character of equipment, methods of instruction, qualifications of teachers, necessary hospital facilities, etc. As a result of this and the council's reports based on its actual inspection, an unprecedented improvement in the physical equipment and methods of medical education was started. New college buildings have been erected; more teaching hospitals have been secured; new laboratories have been equipped and more expert full-time teachers employed.

During each of the seven years the council has held a special, delegated conference attended largely by members of state licensing boards, university presidents, representatives of medical colleges and other prominent educators. These conferences have had a wide and powerful influence in the progress that has been made. They have resulted in more uniformity of effort on the part of all forces working for the betterment of educational standards and have provided opportunity for the study and discussion of educational problems. Above all, however, at these conferences, the attention of university presidents and others has been drawn to the absolute necessity of state aid or private endowment for medical schools. As a direct or indirect result of this campaign, the amount of money given for medical education has increased from a few thousands of dollars during 1904 to several millions of dollars during the last year. This is indeed encouraging and gives promise of even greater advancement in the immediate future.

Of course, not all the credit for these vast improvements belongs to the Council on Medical Education. Nevertheless this body, representing the organized profession of the country and holding up standards of national and not sectional scope, was bound to have a powerful influence. It has cooperated with the other agencies which have been doing masterly work in their various fields, and has brought about greater harmony and more unanimity of effort. These achievements are the more gratifying since all the agencies save one, the Carnegie Foundation for the Advancement of

Teaching, are entirely made up of physicians and fully represent the medical profession. Meanwhile, no one is better acquainted with the needs of the people in regard to the prevention and cure of disease and the preservation of health and healthful conditions than the medical profession itself. And that the medical profession may be even more capable of caring for these needs, nothing is more important than the continued improvement of medical education.—*Journal of the American Medical Association*.

SCIENTIFIC JOURNALS AND ARTICLES

THE contents of the *Journal* of the Washington Academy of Sciences for August are as follows:

Physics.—“Melting Temperatures of Sodium and Lithium Metasilicates,” F. M. Jaeger.

“A Method for Determining the Density of certain Solids by means of Rohrbach’s Solution having a Standard Refractive Index,” H. E. Merwin.

Electricity.—“A Study of the Current Transformer with Particular Reference to Iron Loss,” P. G. Agnew.

Geochemistry.—“Minerals and Rocks of the Composition $MgSiO_3$ — $CaSiO_3$ — $FeSiO_3$,” Robert B. Sosman.

Mineralogy.—“Crystallized Turquoise from Virginia,” Waldemar T. Schaller.

“Quartz and Fluorite as Standards of Density and Refractive Index,” H. E. Merwin.

“The Temperature Stability Ranges, Density, Chemical Composition and Optical and Crystallographic Properties of the Alkali Feldspars,” H. E. Merwin.

Petrology.—“A Micrometer Ocular with Coordinate Scale,” Fred Eugene Wright.

“The Lavas of Hawaii and their Relations,” Whitman Cross.

Paleontology.—“Remarks on the Fossil Turtles Accredited to the Judith River Formation,” F. H. Knowlton.

Zoology.—“Remarks on the Nervous System and Symmetry of the Crinoids,” Austin H. Clark.

Chemical Statistics.—“The Consumption of the Commoner Acids in the United States,” Charles E. Munroe.

Abstracts.—Geodesy; Meteorology; Terrestrial Magnetism; Electricity; Radio-telegraphy; Chemistry; Electrochemistry; Agricultural

Chemistry; Mineralogy; Geology; Botany; Forestry; Zoology; Conchology; Fisheries; Pharmacology; Bacteriology; Sanitation; Engineering.

Proceedings.—Washington Academy of Sciences.

SPECIAL ARTICLES

WHERE ARE THE LARAMIE DINOSAURS?¹

THE Ceratopsidae or horned dinosaurs have so long been regarded by paleontologists and others as belonging to the Laramie formation, and also that this “Laramie formation” containing them is of Cretaceous age, that facts which seem to oppose this view make but slow headway. That the true Laramie is of Cretaceous age no one is likely to question at this stage of the discussion, but the mistake lies in presuming that the dinosaur-bearing beds belong to the Laramie. At the Baltimore meeting of the Geological Society of America (December, 1908) I ventured to say, in a public discussion of one of the correlation papers, that there was no known locality in North America where dinosaurs (Ceratopsidae) occur in true, undoubted Laramie. To the best of my knowledge and belief that statement still holds good.

In June, 1909, I published a paper² in which the following is given as the thesis: “The present paper deals with the extensive series of fresh-water deposits of the northwest (*i. e.*, broadly, the region east of the Rocky Mountains and between Wyoming and the valley of the Mackenzie River) comprising what is here considered as the Fort Union formation. It is shown that the Fort Union embraces more than has been commonly assigned to it. Conformably below the beds by some geologists considered as the true Fort Union occur dark-colored sandstones, clays and shales, which have often been incorrectly referred to the Laramie, or its equivalents, but which are stratigraphically and paleontologically dis-

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²“The Stratigraphic Relations and Paleontology of the ‘Hell Creek Beds’ and Equivalents, and their Reference to the Fort Union Formation,” *Proc. Wash. Acad. Sci.*, Vol. 11, 1909, pp. 179–238.